

providing a mass spectrometry probe comprising a paper substrate in which a portion of the paper substrate is coated with an electrically conductive material that is not a sample or a solvent, in a manner that a plurality of nanoscale features protrude from the paper substrate, the plurality of nanoscale features configured to act as a plurality of electrodes and upon application of a voltage of 3 volts or less, providing a field strength high enough to cause field emission of microscale solution droplets at the plurality of nanoscale features at a voltage that does not cause fragmentation of the analyte;

connecting the mass spectrometry probe to a voltage source, wherein the voltage source is configured to generate a voltage of 3 volts or less;

contacting the mass spectrometry probe with a biological molecule;

ionizing the biological molecule that has contacted the mass spectrometry probe; and

analyzing the ionized biological molecule in a mass spectrometer.

22. The method according to claim **21**, wherein the electrically conductive material comprises one or more electrically conductive nanotubes.

23. The method according to claim **23**, wherein the electrically conductive nanotubes are carbon nanotubes.

24. The method according to claim **23**, wherein the carbon nanotubes coat an external surface of the paper substrate.

25. The method according to claim **21**, wherein prior to the ionizing step, the method further comprises applying a solvent to the mass spectrometry probe.

26. The method according to claim **25**, wherein the solvent is continuously supplied to the mass spectrometry probe.

27. The method according to claim **25**, wherein the mass spectrometry probe is separate from the solvent.

28. The method according to claim **25**, wherein the solvent assists in at least one of separation, extraction, and ionization of the sample.

29. The method according to claim **21**, wherein pneumatic assistance is not required to transport the sample through the mass spectrometry probe.

30. The method according to claim **21**, wherein the paper is filter paper.

31. A method for analyzing a sample, the method comprising:

providing a mass spectrometry probe comprising a paper substrate and a plurality of carbon nanotubes, the mass spectrometry probe configured such that a portion of each of the plurality of carbon nanotubes protrudes from the paper substrate forming a plurality of nanoscale features that extend from the paper substrate, the plurality of nanoscale features configured to act as a plurality of electrodes and upon application of a voltage of 3 volts or less, providing a field strength high enough to cause field emission of microscale solution droplets at a voltage that does not cause fragmentation of the analyte;

connecting the mass spectrometry probe to a voltage source, wherein the voltage source is configured to generate a voltage of 3 volts or less;

contacting the mass spectrometry probe with a biological molecule;

ionizing the biological molecule that has contacted the mass spectrometry probe; and

analyzing the ionized biological molecule in a mass spectrometer.

32. The method according to claim **31**, wherein the carbon nanotubes coat an external surface of the paper substrate.

33. The method according to claim **31**, wherein prior to the ionizing step, the method further comprises applying a solvent to the mass spectrometry probe.

34. The method according to claim **33**, wherein the solvent is continuously supplied to the mass spectrometry probe.

35. The method according to claim **33**, wherein the mass spectrometry probe is separate from the solvent.

36. The method according to claim **33**, wherein the solvent assists in at least one of separation, extraction, and ionization of the sample.

37. The method according to claim **31**, wherein pneumatic assistance is not required to transport the sample through the mass spectrometry probe.

38. The method according to claim **31**, wherein the paper is filter paper.

39. The method according to claim **38**, wherein the filter paper comprises a pointed tip.

40. The method according to claim **38**, wherein the filter paper does not comprise a pointed tip.

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